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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/734,696	12/12/2003	Robert L. Memmen	085.10762-US(03-501)	1219
34704 7590 04/28/2008 BACHMAN & LAPOINTE, P.C. 900 CHAPEL STREET SUITE 1201 NEW HAVEN, CT 06510			EXAMINER HONG, JOHN C	
			ART UNIT 3726	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/734,696	Applicant(s) MEMMEN ET AL.	
	Examiner JOHN C. HONG	Art Unit 3726	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
4a) Of the above claim(s) 16-31 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-13 and 15 is/are rejected.
- 7) ☒ Claim(s) 14 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>10/25/07</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

In view of the Pre-Brief filed on 9/4/07, PROSECUTION IS HEREBY REOPENED. A new Office Action is set forth below.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. **Claims 1,2,6-12 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Neal et al. (US2002/0076573) in view of JP08209339**

Regarding Claim(s) 1, Neal et al. teach a method for restoring a part (30) which has lost first material (31a) from a site, the first material being from a metallic substrate and the method comprising: placing the part in a deposition chamber; evaporating components for forming a repair material (43) ionizing the evaporated components (45) (Fig. 4-6A; [0033-34]).

Neal et al. fail to teach the steps of : applying a first electric potential to the part; and modulating the first electric potential so as to draw the ionized components to the part so that buildup of the repair material at least partially replaces the first material.

'339 teaches the steps of : applying a first electric potential to the part ; and modulating the first electric potential so as to draw the ionized components to the part (S6) so that buildup of the repair material at least partially replaces the first material (Fig. 6 ; [0033],[0034], Abstract)

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to employ the step of modulating the first electric potential so as to draw the ionized components to the part so that buildup of the repair material at least partially replaces the first material, as taught by '339 on the method of Neal et al. so as to improve the quality and adhesiveness of the evaporated particles.

Regarding Claim(s) 2, Neal et al. teach the part is a Ti alloy turbine part and the repair material is Ti-based ([0004]).

Regarding Claim 6, '339 teaches the ionizing is modulated ([0026],[0027]).

Regarding Claim(s) 7, Neal et al. teach the step of removing additional material of the metallic substrate at least partially from the site to create a base surface; and the physically depositing deposits said repair material atop the base surface at least partially in place of the first material and the additional material ([0025]).

Regarding Claim(s) 8, Neal et al. teach the deposited repair material in major part replaces the first material (Figs 4-6A).

Regarding Claim(s) 9, Neal et al. teach the repair material comprises material selected from the Ti based super alloy ([0004]) and the material selected from the group consisting of Ti-6Al-4V, Ti-6Al-2Sn-4Zr-2Mo, Ti-SAl-IV11Mo, or and Ti-6Al-2Sn-4Zr-6Mo are the Ti based superalloy.

Regarding Claim(s) 10, Neal et al. teach the removing of additional material is, in major part, from undamaged portions of the part ([0025]).

Regarding Claim(s) 11, Neal et al. teach the part is a blade having a root and an airfoil and the site is along a leading edge of the airfoil inboard of a midspan shroud of the airfoil (Figs 1-3).

Regarding Claim(s) 12, since it is well known in the art that the depth of the damaged part can be various, so it can be the first material is lost to a depth of at least 2.0 mm.

Regarding Claim(s) 15, Neal et al. teach the method is performed at a pressure less than 0.01 Pa ([0035]).

3. Claims 3 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Neal et al. / '339 as applied to claim 1 above, and further in view of JP2003188115.

Regarding Claim(s) 3, Neal et al. /'339 teach the limitation except the modulating is performed so as to prevent arcing from the part.

As mentioned in the Applicant's specification [0045], arc discharge can be prevented by modulating square pulse wave form, '115 modulates square pulse wave form (Figs 1 and 2, [0037]) which will reduce the arc discharge.

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to employ the step of modulating square pulse wave form on the method of Neal et al. /'339 so as to reduce the arc discharge.

Regarding Claim(s) 5, Neal et al. / '339 teach the limitation except the step of maintaining a principally negative potential; and applying positive pulses of relatively short duration.

'115 teaches the step of maintaining a principally negative potential; and applying positive pulses of relatively short duration (Figs.1 and .2 ; [0037]).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to employ the step of maintaining a principally negative potential; and applying positive pulses of relatively short duration, as taught by '115 on the method of Neal et al. /'339 so as to prevent the deterioration of film forming efficiency.

4. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Neal et al. /'339 as applied to claim 1 above, and further in view of Osada et al. (U.S. Patent 5624720).

Neal et al. /'339 teach the limitation except the step of heating the part and modulating the heat on the part in conjunction with the modulating of the 1st electric potential.

Osada et al. teach the step of heating the part and modulating the heat on the part in conjunction with the modulating of the 1st electric potential (Figs 1,3A-3E; col. 7, lines 47-61).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to employ the step of heating the part and modulating the heat on the part in conjunction with the modulating of the 1st electric potential, as taught by Osada et al. on the method of Neal et al. /'339 so as to achieve high quality and good uniformity deposition film forming (col. 2, lines 63-65).

5. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Neal et al. /'339 as applied to claim 1 above, and further in view of Carl, Jr. et al. (U.S. Patent 6754955).

Neal et al. /'339 teach the limitation except the step of applying a backing element to the part protruding adjacent the site so that the deposited repair material builds up on the base surface and backing element.

Carl, Jr. et al. teach the step of applying a backing element to the part protruding adjacent the site so that the deposited repair material builds up on the base surface and backing element (Fig. 4, col. 4, lines 35-41).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to employ the step of applying a backing element to the part protruding adjacent the site so that the deposited repair material builds up on the base surface and backing element, as taught by Carl, Jr. et al. on the method of Neal et al. /'339 so as to repair a tip of a turbine blade.

Allowable Subject Matter

6. Claim 14 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

7. Applicant's arguments with respect to claims 1-15 have been considered but are moot in view of the new ground(s) of rejection. See the new Office action. Applicant's argument :

Regarding claims 1,3-6 and 15, Neal et al. teaches the step of : repairing the lost material from a site (not mere coating the surface); the method is performed at a pressure less than 0.01 Pa on [0035] showing the pressure range is $10^{-5} - 10^{-2}$ Torr which is ranging 0.00133Pa - 1.33Pa and covers the claimed pressure range ; and '339 teaches the step of modulation of the electric potential; **Regarding claim 13**, Carl, Jr. et al. teaches the step of applying a backing element to

the part protruding adjacent the site so that the deposited repair material builds up on the base surface and backing element even though it seems spaced apart from the weld build-up material.

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JOHN C. HONG whose telephone number is 571-272-4529. The examiner can normally be reached on M-F 9:00-17:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, DAVID BRYANT can be reached on 571-272-4526. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 3726

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/JOHN C HONG/
Primary Examiner, Art Unit 3726

Jh
4/24/08